Strategic Planning Branch

REPORT

Know Your City

Suburban Housing Mix and Density

Research Paper Number 22

THE CITY OF Edmonton PLANNING AND DEVELOPMENT

Research Paper No. 22

Suburban Housing Mix and Density

by

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Important Note: This technical paper was prepared by the Corporate Forecasting Group, Long Range Planning Branch, Planning and Building Department. It documents research results as part of an ongoing forecasting activity. Neither the methods nor the results have been endorsed by the City of Edmonton

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SUBURBAN HOUSING MIX AND DENSITY

1. PURPOSE

Single family housing has recently dominated development activity in Edmonton's suburbs. The strong emphasis on one dwelling type and the move towards lower density development has implications for housing mix, population density and dwelling unit density. These issues will be addressed in the new General Municipal Plan (GMP).

This paper is a background study to the preparation of the 1988 General Municipal Plan. The paper will examine current trends in suburban housing development to determine:

(i) how actual development differs from structure plan proposals and Land Use Bylaw requirements; the implications of these differences for population;
(ii)) the extent of the impact on proposed new communities (Lewis Farms and The Meadows);
(iii) whether actual and future population and housing unit figures will be different enough from plan proposals to affect service provision;
(iv) the effects on neighbourhood design; and
(vi) what new approaches are needed to deal with the observed trends in the new General Municipal Plan, development concept plans and new neighbourhood area structure plans.

2. EMERGING FEATURES

2.1 Uncertain development climate favours single family housing

Recent changes in the housing market have created a climate of great uncertainty within which developers must operate. Following the peak year of 1981, the housing market plunged to depths from which it has only recently begun to emerge.

The City of Edmonton Housing Market Report (Planning and Building Department) states that housing starts declined by 78% from 10,515 in 1981 to 2,363 in 1987; residential land for 5,587 potential dwelling units was serviced in 1981 compared with an estimated 1,800 potential dwelling units in 1987; mortgage rates fell to 10% in 1987 from a peak of 21% in 1981, and rental vacancy rates settled at 5.6% in 1987 after a sharp rise from 1.6% in 1981. In the face of such uncertainty, developers have been forced to develop new areas more cautiously, opening up fewer new areas at once and concentrating on building housing types for which there is a known demand, in desirable areas of the city.

An indication of the likely housing demand can be obtained from population and economic forecasts. Population projections for the City of Edmonton by the Corporate Forecasting Group, Planning and Building Department, forecast a growth rate of 1.3% per year to 1993 with different trends occurring for each age group. These trends will have implications for demand for each housing type.

A decline in the 20 to 24 age group is forecast between 1986 and 1990, suggesting a weak market for rental housing. No growth in the 25 to 34 age group is predicted, indicating little additional housing for first time buyers will be required. The two sectors for which growth is foreseen is the move-up market (35 to 44 age group) and seniors' housing.

Lower population growth, an aging population and only moderate economic growth will mean that household growth for the next five years will be lower than for 1981 to 1986, reducing the demand for new housing.

One of the effects of the uncertain development climate is the long 'build-out' time of recently approved area structure plans. For example, in Mill Woods development activity began in 1972 but the community is not yet complete. In the present economic climate it is likely that long build-out times will continue to be a feature of new residential subdivisions.

Under the conditions outlined above, the financing and initiating of new housing development will be constrained. Developers are expected to develop land close to existing communities and to build housing for which a market is guaranteed. Single family housing is expected to continue to dominate the new housing market.

2.2 Single family housing creates homogeneous low density neighbourhoods

Single family housing is dominating the new housing market in the suburbs, creating lower density, more homogeneous, neighbourhoods than proposed in

the existing GMP. Planned multi-family housing is not being built in new suburban areas in sufficient quantities to provide a wide housing choice. In recent years, lower housing prices and lower mortgage rates have made single family homes more accessible to a wider range of income groups and multi-family housing has not been in demand. No apartments have been built in area structure plan areas since 1982 and row housing has declined in importance in recent years to 6% of total building permits issued in 1985 and 1986, with no permits issued for row housing in 1984. (Status of Residential Land, Corporate Forecasting Group, Planning and Building Department)

Large amounts of land allocated in area structure plans for multiple family dwellings have remained vacant as a result. Forecasts show that from 1987 to 1992, suburban single family housing is expected to account for over 95% of new housing construction in Edmonton. (Managing Urban Change in Edmonton, August 1987, Planning and Building Department) There appears limited potential demand for the large inventory of land allocated for multi-family housing in the suburbs. At the end of 1986, undeveloped sites with a capacity for over 16,000 potential multi-family units were serviced and available. The demand for multiple family units in the suburban areas is expected to approximate only 150 to 250 units per year to 1992.

In response to this vast surplus inventory of land, the development industry is pressing for land use district changes to allow further development of single family housing. In 1986, sites for 406 multi-family units were redistricted to allow 91 single family units. Pressure for redistricting is likely to continue and intensify.

2.3 Declining densities of suburban housing development

A recent study, 'Residential Development Trends in Newly Developing Areas', (May 1986), investigated the impact of redistricting applications and structure plan amendments on residential densities. The study concluded that the general trend was towards lower residential densities throughout the suburbs because few of the proposed multi-family units were being built and developers were concentrating on providing single family homes, applying for redistricting of multi-family land where necessary.

As well, housing densities in the newly developing suburbs have been further reduced by the tendency for both single family and multi-family housing to be built at densities considerably lower than the maximum allowed in the Land Use Bylaw and lower than proposed in structure plans. Table 1 gives a comparison of actual built densities for a number of neighbourhoods with the maximum allowed by the Land Use Bylaw; it provides a good example because it deals with a large number of units in all areas of the city. Row housing may approximate the maximum allowable density under the RF5 district (42 units per hectare) in several examples, but may also be more than 30% below the maximum density (e.g., Bearspaw and Lago Lindo). A new type of RF5 development is emerging which is resulting in even lower densities: housing for seniors is being built as linked units. The Horizon Village development in Riverbend is an example, with 85 units and a density of 17.9 units per hectare. Single family housing ranges from densities 56% below the maximum to 33% below.

The sample neighbourhoods in Table 1 also exhibit densities for low rise apartments which are often at least 50% below the 125 units per hectare allowed in the Land Use Bylaw for the RA7 land use district. The 'Kaskitayo Dwelling Unit Density Report' also found a substantial difference between actual densities and the maximum allowed in the Land Use Bylaw, although development under RF5 was close to the maximum (38.9 dwelling units per hectare). Other land use districts are listed below:

Dwelling Units per net Developed Area by Land Use Districts - Kaskitayo - May 1985

Land Use District	Property Area (ha)	Dwelling Units (du)	Actual Units Per Net Area (du/ha)	Permitted Land Use Bylaw Density (du/ha)
RF5	50.6	1,967	38.9	42
RF6	1.6	68	41.3	80
RA7	30.9	2,290	74.1	125
RA8	5.3	424	80.6	125

Source: Kaskitayo Dwelling Unit Density Report (PLANS demonstration report) July 1986

The observed densities for RF6, RA7 and RA8 are 48%, 41% and 36% respectively below the maximum density permitted by the Land Use Bylaw. Since neighbourhood planning and service provision are based on maximum allowable densities, they assume populations in excess of those actually being achieved.

2.4 Actual population density per dwelling unit close to estimates

A further comparison shown in Table 1, is that of the actual population density per dwelling unit with average density figures produced for the 'Report on Residential Population Densities in Edmonton,' which are used during the plan approval process to estimate the population of new neighbourhoods. The actual population density figures, by dwelling unit type, in Column 5 of Table 1 emerge as being remarkably close to the population density report figures, (Column 6, Table 1), although row housing figures are slightly lower.

2.5 Results are fewer houses and a lower population than planned

The continuation of these housing development trends will have a highly significant impact on housing mix and on population levels. To illustrate the effect of these trends, the study "Residential Development Trends in Newly Developing Areas" examined the West Jasper Place plan area. The expected final housing mix was found to be similar to that proposed in the 1978 area structure plan and within the General Municipal Plan guidelines.

Table 1: Development Densities

Neighbourhood	(1) Dwelling Type	(2) Number of Dwelling Units	(3) Actual Density (du/ha)	(4) Permitted Land Use Bylaw (du/ha	(5) Actual Population Density (p/du)	(6) Population Density Report (p/du)
Aldergrove (West Jasper Place)	Single Detached	978	14.69	27.8	3.32	3.46
	Row	401	32.29	42	2.86	3.17
	Low Rise	472	66.00	125	2.44	2.04
Bannerman (Clareview)	Single Detached	557	17.77	27.8	3.42	3.46
	Row	433	40.59	42	2.94	3.17
	Low Rise	224	66.84	125	2.05	2.04
Baturyn (Castle Downs)	Single Detached	1,226	17.37	27.8	3.50	3.46
	Row	395	30.94	42	3.11	3.17
	Other	43				
Bearspaw (Kaskitayo)	Single Detached	492	15.94	27.8	3.19	3.46
	Row	115	27.73	42	2.59	3.17
	Other	30				
Belmont (Clareview)	Single Detached	549	17.77	27.8	4.48	3.46
	2-Unit	4	18.98	33.3	2.25	2.81
	Row	629	42.63	42	3.06	3.17
	Low Rise	104	100.36	125	2.07	2.04
Caernarvon (Castle Downs)	Single Detached	906	17.84	27.8	3.53	3.46
	2-Unit	3	32.33	33.3	2.33	2.81
	Row	539	38.12	42	3.05	3.17
	Low Rise	106	68.17	125	2.20	2.04
	Other	1				
Cariepy (West Jasper Place)	Single Detached	564	16.09	27.8	3.40	3.46
	Row	48	65.39	42	1.84	3.17
	Low Rise	102	48.75	125	2.17	2.04
	Other	2				
Lago Lindo (Lake District)	Single Detached	886	18.11	27.8	3.21	3.46
	Row	103	28.12	42	2.46	3.17
Minchau (Mill Woods)	Single Detached	722	18.57	27.8	3.49	3.46
	2-Unit	6	31.32	33.3	1.83	2.81
	3&4 Plex	4	51.55	42	2.25	2.44
	Row	106	39.28	42	3.21	3.17
	Low Rise	83	84.91	125	2.05	2.04
Ramsay Heights (Riverbend)	Single Detached	639	12.32	27.8	3.41	3.46
	Row	173	36.65	42	2.82	3.17
	Low Rise	473	61.10	125	1.68	2.04
Rhatigan Ridge (Riverbend)	Single Detached	400	13.44	27.8	3.54	3.46
Richfield (Mill Woods)	Single Detached	532	16.59	27.8	3.61	3.46
	2-Unit	2	26.74	33.3	3.50	2.81
	Row	517	43.48	42	3.04	3.17
	Low Rise	81	62.45	125	2.81	2.04
Sakaw (Mill Woods)	Single Detached	850	18.13	27.8	3.60	3.46
	2-Unit	1	19.49	33.3	4.00	2.81
	Row	184	41.47	42	3.20	3.17
	Low Rise	115	60.66	125	2.75	2.04
Thorncliff (West Jasper Place)	Single Detached	427	15.49	27.8	3.32	3.46
	Row	654	42.54	42	2.84	3.17
	Low Rise	262	63.67	125	2.17	2.04
Total Units		16,145				

Sources:

(1), (2), (3) (5) PLANS Information System (May 1985) Information Systems Management Section, Long Range Planning Branch
(4) Edmonton Land Use Bylaw (Bylaw 5996) Office Consolidation No. 7, June 1, 1987.
(6) PRISM Report on Residential Population Densities in Edmonton, City of Edmonton Planning Department, May 1983.

Housing Mix in West Jasper Place

	Singles & Semis		Ground Related Multiples		Apartment Units		Total Units
Total Expected Ultimate Units	11,647	(53.7%)	4,655	(21.4%)	5,395	(24.9%)	21,697
Total Forecasted Units in 1978 ASP	12,840	(51.7%)	6,470	(26.0%)	5,540	(22.3%)	24,850

The "Total Expected Ultimate Units" figures were produced by examining the development trends in individual neighbourhoods and making assumptions on how vacant parcels would be developed. (The assumptions made for each neighbourhood are described in Appendix A.) Although the dwelling mix was found to be similar to that proposed in the area structure plan, the total number of units expected is 12.6% less than the area structure plan total.

However, there is great variation in how closely the projected population of each neighbourhood compares with its planned population. Estimates of the expected population for each dwelling unit type in each neighbourhood have been derived (Table A1, Appendix A), using the figures produced in the study, "Residential Development Trends in Newly Developing Areas". For example, Aldergrove has a projected population of 88% of that proposed in the outline plan; LaPerle has a projected population of 73% and Summerlea, which has undergone great changes to accommodate the growth of West Edmonton Mall, is expected to reach only 46% of its original planned population. However, for most of the neighbourhoods in West Jasper Place, the expected population is lower than that proposed in the outline plan and subsequent amendments.

Fewer multi-family units and lower dwelling unit densities are causing lower neighbourhood population levels. Population levels significantly below the estimates in area structure plans mean that service provision calculations are excessive and threshold populations may never be reached. This problem is particularly applicable to school provision: vacant school sites remain within substantially completed neighbourhoods (e.g., Callingwood and LaPerle, West Jasper Place).

The strong emphasis on single-family housing may have a detrimental effect on particular population groups. If multi-family housing is not available in the suburbs, lower-income groups may be excluded from these areas in the future. Homogeneous neighbourhoods will also be unable to offer flexibility to people whose housing needs change.

3. POPULATION IMPACT OF DEVELOPMENT TRENDS ON FUTURE AREA STRUCTURE PLANS

3.1 Future Population of Lewis Farms and The Meadows may be considerably less than planned

Vacant sites for multiple family housing development in suburban areas are being redistricted to allow more single family housing to be built. As well, multiple family housing is being built at considerably lower densities than those permitted in the Land Use Bylaw and area structure plans. However, observed population densities are close to the estimates used by the Planning and Building Department. The implications of these trends in new area structure plans were examined by applying three scenarios to the housing mix, housing density and population figures for Lewis Farms Area Structure Plan (March 1987) and The Meadows Area Structure Plan Amendment (May 1987)

Scenario 1 assumed that, for each neighbourhood, the whole of the land area proposed for multi-family housing (RF5 and above) was developed as single family housing (RF1). Scenario 2 assumed that RF1, RF4 and RF5 land was developed as proposed in the area structure plans and multi-family land with districts of RF6 and above was developed half for single family housing and half as per the proposed district. Scenario 3 assumed that RF1 to RF5 land was developed as proposed and all multi-family sites (RF6 and above) were developed, at half the permitted density. The detailed calculations for each scenario by area structure plan are included in Appendix 2.

Table 2 shows the likely range of population which will be achieved in Lewis Farms and The Meadows. If all land which is proposed for multi-family housing were actually developed for single family housing (RF1) (Scenario 1), the lowest population would result. For Lewis Farms, Scenario 1 produces a population which is 26% below the planned number. For the Meadows, Scenario 1 is 14% below the planned population. The impact of this Scenario on Lewis Farms is greater than on The Meadows because the Lewis Farms Area Structure Plan includes more multi-family units.

The planned population levels for Lewis Farms and The Meadows should be considered as maximums. Under current foreseeable conditions, the actual future population levels are likely to be closer to the Scenario 2 or 3 levels; that is at least 5 to 10% below the planned levels.

Table 2: Changes to Proposed Population Under Different Development Scenarios

Plan Area	Planned Population & Planned Density	Scenario 1	Scenario 2	Scenario 3
Lewis Farms	27,439	20,200 (-26%)	24,620 (-10%)	23,943 (-13%)
	45.7 p/gdh	33.6 p/gdh	41 p/gdh	40 p/gdh
The Meadows	46,492	39,923 (-14%)	44,378 (-4.5%)	43,502 (-6%)
	43.12 p/gdh	37.0 p/gdh	41.2 p/gdh	43.12 p/gdh

3.2 Reduced row housing has greatest impact on school provision

The impact of potentially reduced population levels on the provision of schools was examined for both Lewis Farms and The Meadows. The student generation rates used by the Edmonton Public School Board were applied to the expected dwelling unit totals in the area structure plans and in each of the scenarios described above. The number of elementary school children expected in each neighbourhood was calculated, giving an estimate of the impact of each development scenario on the demand for new schools.

The greatest impact was found under Scenario 1, which assumes that all multi-family housing land, including the row housing in RF5, would be developed for single family housing. In Scenarios 2 and 3, where RF5 land is retained for row house development, the school provision requirement was much closer to the planned figures in the Lewis Farms and the Meadows Area Structure Plans. For Lewis Farms there was a difference of 400 pupils between the Area Structure Plan figures and Scenario 1 and for The Meadows a difference of 500 pupils. Only by applying Scenario 1 would there be sufficient difference in student generation figures to affect the provision of a school.

The presence of apartments (built under RA7, RA8, and RA9 land use districts) makes little difference to the number of students expected. RF5 housing has the greatest impact on school provision, as the School Board assumes that row housing generates the same number of students per unit as single family housing, but at a higher density. Row housing is regarded as the most significant housing type for determining the need for schools because young families are the most likely population group to be accommodated in row housing. Row housing also has a high turnover of occupants and so has potential for retaining young children within a neighbourhood as it ages. Scenario 1 shows a large reduction in the number of potential pupils because it assumes that there will be no row housing built. The student generation figures for these scenarios, for each different dwelling type are shown in Appendix C.

4. NEIGHBOURHOOD FORM

4.1 Integration of multi-family sites throughout neighbourhoods allows for housing mix

Recent area structure plans attempt to provide for a full range of housing types in line with the policies in the General Municipal Plan. The proposed Lewis Farms Area Structure Plan has four neighbourhoods with housing types ranging from RF1 to RF6, two neighbourhoods with densities up to RA7, and two neighbourhoods (adjacent to the primary commercial site) where RA8 and RA9 districts are also included.

Five of the seven neighbourhoods in The Meadows Area Structure Plan have provision for housing densities up to and including those allowed by the RA7 district. One neighbourhood includes only RF1 and RF5 districts and the seventh neighbourhood includes residential districts from RF1 to RA8. Districts RF1 to RF4 are located in the inner sector of the neighbourhoods, RF5 and RF6 are adjacent to the school/park site, in each neighbourhood and RA7 and RA8 are adjacent to the major commercial site.

Although a wide variety of housing types is included in each area structure plan, the location of higher density development is generally restricted within neighbourhoods to central sites. Consequently, there will be a significant impact on neighbourhood layout if multi-family sites are not developed: large tracts of highly visible land would remain vacant. Future single family housing development on such sites may be incompatible with adjacent uses and with the road layout. The potential integration, on a planned basis, of sites for multiple units among areas of single family housing would allow greater flexibility in neighbourhood development. If there were no potential market for multi-family housing and only single family housing were being built, such smaller dispersed sites could readily accommodate additional single family housing which would be compatible with adjacent low density development and with established road patterns.

4.2 Need new approach to neighbourhood design

Although neighbourhoods are generally designed around a neighbourhood focus, the desired community form has often not materialized because the central facilities have not been provided. Table 3 shows, for sample neighbourhoods, the amount of vacant land still awaiting development for central neighbourhood facilities. Commercial outlets may also not have been developed because they depend on a stable market area; the slow completion of communities has resulted in a delay in establishing complete market areas and hence a delay in the provision of commercial facilities. Commercial development within new areas has also been affected by the recent trend towards the concentration of retail outlets along major roadways. The development of "megastrips" has changed the pattern of retail development from the orderly hierarchy of outlets serving different sized communities to a retail structure which is oriented towards the transportation system and whose market area is determined by accessibility. The development of 'megastrips' is discussed in 'Planning to Accommodate Megastrip Development' (D. Hussey, Corporate Forecasting Group, February 1987).

Many new neighbourhoods have no schools and the School Board has indicated that it has insufficient funds to increase its building program in the next three years. One option is to have fewer schools in new areas and the sharing of facilities between neighbourhoods. An alternative approach is to introduce more uses for the school building. The school could then continue as the neighbourhood focus because costs would be shared among several different users. The School Board is retaining its sites in the hope that the problem will be resolved; the Board has not, so far, decided against building a school because expected population levels have not been reached.

The extent of arterial and collector roadway provision in new neighbourhoods is related to expected population levels. Although the location of an area structure plan in relation to existing routes and the expected destinations of residents are critical factors, road capacities (and hence costs) are determined at the local level by the size of the population. If planned population levels exceed those actually reached, road provision may be in excess of needs.

The physical form of the neighbourhood is planned in accordance with expected population levels but planned population levels are not being achieved. Existing guidelines should be changed to reflect current economic conditions and be more responsive to change, so that the form of the neighbourhood conforms to the needs of the population. The distribution of the population within the neighbourhood will have an impact on how the local community functions. If a heterogeneous community is to be successfully developed, different housing types should be closely integrated within each neighbourhood. Flexibility in the provision and use of community facilities would allow greater efficiency and ensure that the needs of the population are met at all stages in the neighbourhood life cycle.

TABLE 3: Undeveloped Land Designated for Neighbourhood Facilities

Neighbourhood	Land Use District	Number of Properties	Area (ha)
Aldergrove	US	1	4.0
Bannerman	AP	1	2.8
Baturyn	US	1	3.6
	AP	2	1.1
Bearspaw	AP	6	7.1
Belmont	US	1	0.6
Caernarvon	US	4	6.2
	AP	4	2.7
Gariepy	US	2	3.9
	AP	4	1.6
Lago Lindo	US	1	0.4
	AP	1	0.7
Minchau	US	1	2.7
	AP	2	1.2
Ramsay Heights	A	1	1.6
	AP	2	1.7
Rhatigan Ridge	US	2	1.2
Richfield	US	8	4.2
	PU	1	0.3
	AP	6	3.5
Sakaw	CNC	1	0.8
	US	2	3.9
	AP	1	3.7
Thorncliff	AP	1	1.7

Source: Plans Information System, Planning and Building Department, May 1986

5.0 CONCLUSIONS

(i) In the new neighbourhoods fewer dwelling units than proposed in area structure plans are being built and maximum densities allowed by the Land Use Bylaw are not being reached. The most significant impact on new neighbourhoods arises from the failure to build multi-family housing: neighbourhood population is reduced and large areas of vacant land in central locations have been left vacant. The analysis of proposals for Lewis Farms and The Meadows shows that the continuation of current development trends could be highly significant, particularly if no multi-family housing is built. Although the reduction in population will have an impact on the use of services, the full effect on service provision is not yet apparent.

(ii) Current maximums for housing density, especially low rise units, (RA7 and RA8), in the Land Use Bylaw are excessive when compared with actual development trends. Lower density figures are needed to provide a more realistic planning context.

(iii) A more flexible approach is required to deal with the current uncertainty in the housing market and to allow for responses to changing needs as a neighbourhood's demographic profile changes. Instead of using specific population and density guidelines in plans, there is a need to design neighbourhoods with a structure having the capacity for a range of population and which can adapt to changes during the growth of the community. An approach which foresees a range of population and a neighbourhood structure with varying capacities is also appropriate when completion of neighbourhoods is slow. Specific features of the approach would include:

a) Multi-family sites should be small in scale and well-integrated into single family areas to allow their use for single family housing if demand shifts. Policies should allow such changes to take place where the proposed development is compatible with surrounding housing.

b) Larger neighbourhoods or the sharing of facilities between neighbourhoods may allow more efficient use of central community services, but longer distances to schools would result, requiring greater bus use. Alternatively, smaller neighbourhoods would allow quicker completion of the neighbourhood and would be more appropriate for lower suburban populations. A better mix of dwellings may be more easily achieved. Community facilities would be shared between neighbourhoods.

c) The more flexible use of community facilities would be more cost-effective. Buildings would be used for different purposes as the neighbourhood evolves. Use of schools as community centres, adult education centres, seniors' social centres and recreation facilities would provide a stronger neighbourhood focus and could help share the financial burden on the school boards, helping to meet building and bussing costs.

d) Improved joint planning between the City and the school boards may help in the more rapid use of vacant sites and better community school provision.

e) The downgrading or realignment of some arterial roads may be possible, assuming larger neighbourhoods and lower populations.

(iv) Consistent with these conclusions, the following approaches would apply for the various planning documents:

a) General Municipal Plan

The new General Municipal Plan should contain the following elements:

- policies to reinforce the neighbourhood as the basic element in planning new settlements.
- flexibility in dealing with housing types and sites but maintaining a variety of dwelling unit types.
- integration with adjacent neighbourhoods.
- ensuring access to services.
- emphasis on a central focus while allowing for different components to make up that focus.
- allowing adaptability to different market conditions.
- no specific density requirements.

b) Development Concept Plans

These new strategic documents should apply the general principles in the General Municipal Plan policies to new residential areas, including the following:

- a flexible, strategic approach, based on the concept of neighbourhood capacity
- the integration of multi-family housing sites throughout neighbourhoods.
- commercial uses should be related to those in adjacent areas.
- the exact location of parks, open space and schools need not be identified but their role in the neighbourhood focus should be stated.

c) Neighbourhood Area Structure Plans

The Plans for individual neighbourhoods should include the following elements:

- specific locations for the central focus, schools, housing areas and parks
- identification of facilities shared with other neighbourhoods
- housing mix details
- the location of different housing types

APPENDICES

APPENDIX A

West Jasper Place

West Jasper Place was used as the principal example of the effect of redistricting applications and structure plan amendments on residential densities in the study 'Residential Development Trends in Newly Developing Areas' (May 1986) by the Statutory Planning Unit. As part of the study, a figure was calculated for the ultimate number of dwelling units expected to be built in each neighbourhood. The figure for the ultimate number of dwelling units was based on existing development, proposed development and assumptions about how vacant parcels of land would be likely to be developed . Assumptions for each neighbourhood were as follows:

Aldergrove

Vacant RF1 properties will be developed for single family units.

Belmead

247 RPL lots will be redistricted to RF1, resulting in 197 RF1 lots with a 25% increase in size.

Callingwood North

Separate and public high schools will not be built; the land will be developed as RF1 (220 units).

Gariepy

Vacant RF1 properties will be developed for single family units.

Callingwood South

Vacant RF6 land will be developed at the maximum RF5 density because the land is irregular and has a poor location.

Dechene

Development is occurring as planned in the 1979 neighbourhood structure plan.

Donsdale

The entire area will develop as RF1.

Jamieson Place

There will be no changes from the neighbourhood structure plan.

LaPerle

An additional 18 RF1 lots will be created by redistricting 1.21 hectares of RR land. An additional 144 RA7 units will be added to the 149 already developed.

Lymburn

Vacant RPL, RF5 and RA7 land will be redistricted to RF1, resulting in 165 additional RF1 lots.

Oleskiw

A future replot plan and redistricting of RA7 land will result in 839 RF1 units. 68 RA7 units and 56 RF5 units will be built on land currently vacant.

Ormsby Place

Additional land from the Ormsby West Neighbourhood Structure Plan will be used for single family dwellings; a further 420 lots will be created.

Summerlea

Vacant RF1 lots will be developed for 22 single family houses. The RF6 site will not be developed to its maximum density of 80 units per hectare, but will be developed at 60 units per hectare. Fewer RA7 and RA8 units than planned in the neighbourhood structure plan will be built: 63 RA7 units instead of 116, and 350 RA8 units instead of 583. 8 hectares of AGU land will be developed as non-residential.

Terra Losa

Most of the land set aside for RF5, RF6, RA7, RA8 and RA9 development will be downzoned to RF1.

Thorncliff

Development is occurring as planned. The neighbourhood is close to completion.

Wedgewood Heights

There will be development of 616 lots for single family housing, as proposed in the neighbourhood structure plan.

Westridge

78 vacant RF1 properties will be developed for single family housing.

Table A1: West Jasper Place - Population Estimates

Neighbourhood	(1) Ultimate Units	(2) Persons per Dwelling Unit	(3) Projected Population	(4) A.S.P. Projected Population
Aldergrove				
RF1	1,119	3.46	3,872	
RF5	403	3.17	1,278	
RA7	413	2.04	843	6,790
TOTAL	1,935		5,993	(6,646, NSP)
Belmead				
RF1	861	3.46	2,979	
RF4	22	3.32	73	
RF5	528	3.17	1,674	
RA7	308	2.04	628	
TOTAL	1,719		5,354	6,485
Callingwood North				
RF1	326	3.46	1,128	
RF4	22	3.32	73	
RF5	423	3.17	1,341	
RA7	470	2.04	959	
TOTAL	1,241		3,501	3,719 (Outline Plan amendment, 1972)
Gariepy				
RF1	507	3.46	1,754	
RPL	82	3.46	284	
RF4	20	3.32	66	
RF5	165	3.17	523	
TOTAL	774		2,627	4,352 (Outline Plan amendment, 1972)
Callingwood South				
RF5	450	3.17	1,427	
RF6	101	3.17	320	
RA7	416	2.04	849	
RA8	1,490	2.17	3,233	
TOTAL	2,457		5,829	8,611 (Outline Plan amendment, 1972)
Dechene				
RF1	717	3.46	2,481	2,500-3,100
RF5	57	3.17	181	(2,523, 1979, NSP)
TOTAL	774		2,662	
Donsdale				
RF1	1,081	3.46	3,740	2,000-2,500
Jamieson Place				
RF1	592	3.46	2,048	3,200-3,800
RPL	202	3.46	699	2,869 (NSP)
RF5	105	3.17	333	3,005 (1987 amendment)
TOTAL	899		3,080	

Table A1: West Jasper Place - Population Estimates

Neighbourhood	(1) Ultimate Units	(2) Persons per Dwelling Unit	(3) Projected Population	(4) A.S.P. Projected Population
LaPerle				
RF1	712	3.46	2,464	
RPL	233	3.46	806	
RF4	36	3.32	120	
RF5	499	3.17	1,582	
RA7	293	2.04	598	
TOTAL	1,773		5,570	7,589
Lymburn				
RF1	917	3.46	3,173	
RPL	357	3.46	1,235	
RF5	407	3.17	1,290	
RA7	152	2.04	310	
TOTAL	1,833		6,008	5,276-5,776 (NSP-2,676) (South ASP 2,600-3,100) 4,671 (Outline Plan Amendment, 1972)
Oleskiw				
RF1	839	3.46	2,903	
RF4	25	3.32	83	
RF5	56	3.17	178	
RA7	68	2.04	139	
TOTAL	988		3,303	9,704 (Outline Plan amendment 1972)
Ormsby Place				
RF1	905	3.46	3,131	
RF5	620	3.17	1,965	
RA7	321	2.04	655	
TOTAL	1,846		5,751	4,745 (Outline Plan amendment 1972)
Summerlea				
RF1	250	3.46	865	
RF4	40	3.32	133	
RF5	225	3.17	713	
RF6	97	3.17	307	
RA7	63	2.04	129	6,363
RA8	350	2.17	760	(4,540 NSP)
TOTAL	1,025		2,907	(3,540 1983 amendment)
Terra Losa				
RF1	240	3.46	830	5,058
RA7	617	2.04	1,259	(7,076 - NSP, 1981)
TOTAL	857		2,089	(6,908 1984 amendment)

Table A1: West Jasper Place - Population Estimates

Neighbourhood	(1) Ultimate Units	(2) Persons per Dwelling Unit	(3) Projected Population	(4) A.S.P. Projected Population
Thorncliff				
RF1	419	3.46	1,450	
RF4	30	3.46	104	
RF5	484	3.17	1,534	
RA7	434	2.04	885	
TOTAL	1,367		3,973	4,955
Wedgewood Heights				
RF1	616	3.46	2,131	2,300-2,800 2,130 N.S.P. (1985) 1,866 N.S.P. amendment 1986))
Westridge				
RF1	489	3.46	1,692	
RF5	35	3.17	111	
TOTAL	524		1,803	1,082

Sources:

(1) Residential Development Trends in Newly Developing Areas (May 1986) Statutory Planning Unit.

(2) PRISM Report on Residential Population Densities in Edmonton, City of Edmonton Planning Department, May 1983.

(4) West Jasper Place 1978 Outline Plan.

Appendix B

Scenario #1

Lewis Farms

Assuming all multi-family land is developed as RF1:

Total population loss for neighbourhood 1 - 8	424
	106
	2,825
	214
	610
	613
	1,949
	,496
	7,237

Total population proposed	11,409
	16,030
	27,439

Loss of 26% of proposed population if all multi-family land RF1.

Total population for plan would be	20,200	
Total plan area	600.3	ha
Population density for plan would be (original figure = 45.7)	33.6	p/gdh

Source:

Lewis Farms Area Structure Plan, Mackenzie Spencer Associates Ltd. and Stanley Associates Engineering Ltd., March 1987.

Neighbourhood #1

Population	RF1	2,402	
	RF5	151	
		302	
	RF6	238	
		3,093	
Area	RF5	1.21	ha
		2.41	
	RF6	1.21	
		4.83	ha

Single family development at 16 units/ha x 4.83 ha = 77 units

77 units at 3.46 person/du = 267 persons

If RF5 and RF6 land is developed as RF1, total population = 2,669 (loss of 424) (14%)

Neighbourhood #2

Population	RF1	1,546	
	RF4	83	
	RF5	189	
		1,818	
Area	RF5	1.51	ha

Single family development at 16 units/ha x 1.51 ha = 24 units

24 units at 3.46 persons/du = 83 persons

If RF5 land is developed as RF1, total population = 1,712 (loss of 106)

Neighbourhood #3

Population	RF1	1,098	
	RF5	134	
		84	
	RF6	392	
	RA7	706	
	RA8	1,017	
	RA9	1,085	
		4,516	
Area	RF5	1.07	ha
		0.67	
	RF6	1.98	
	RA7	2.90	
	RA8	2.32	
	RA9	1.74	
		10.68	

Single family development at 16 units/ha x 10.68 ha = 171units

171 units at 3.46 persons/du = 592 persons

If RF5, RF6, RA7, RA8, and RA9 land is developed as RF1, total population = 1,690 (loss of 2,826)

Neighbourhood #4

Population	RF1	1,569	
	RF4	63	
	RF5	180	
	RF6	171	
		1,983	
Area	RF5	1.44	ha
	RF6	0.86	
		2.30	

Single family development at 17.5 units/ha x 2.3 ha = 40 units

40 units at 3.46 persons/du = 138 persons

If RF5 and RF6 land is developed as RF1, total population = 1,770 (loss of 213)

Neighbourhood #5

Population	RF1	2,553	
	RF4	163	
	RF5	124	
	RF5	310	
	RF6	294	
	RA7	242	
		3,686	
Area	RF5	0.99	ha
	RF5	2.48	
	RF6	1.49	
	RA7	0.99	
		5.95	

Single family development at 17.5 units/ha x 5.95 ha = 104 units

104 units at 3.46 persons/du = 360 persons

If RF5, RF6, and RA7 land is developed as RF1, total population = 3,076 (loss of 610)

Neighbourhood #6

Population	RF1	2,568	
	RF4	164	
	RF5	125	
	RF5	312	
	RF6	296	
	RA7	243	
		3,708	
Area	RF5	1.00	ha
	RF5	2.50	
	RF6	1.50	
	RA7	1.00	
		6.00	

Single family development at 17.5 units/ha x 6 ha = 105 units

105 units at 3.46 persons/du = 363 persons

If RF5, RF6 and RA7 land is developed as RF1, total population = 3,095 (loss of 613)

Neighbourhood #7

Population	RF1	2,316	
	RF4	57	
	RF5	164	
	RF5	327	
	RF6	258	
	RA7	637	
	RA8	459	
	RA9	653	
		4,871	
Area	RF5	1.31	ha
	RF5	2.62	
	RF6	1.31	
	RA7	2.62	
	RA8	1.05	
	RA9	1.05	
		9.96	

Single family development at 16 units/ha x 9.96 ha = 159 units

159 units at 3.46 persons/du = 550 persons

If RF5, RF6, RA7, RA8, and RA9 land is developed as RF1, total population = 2,923 (loss of 1,948)

Neighbourhood #8

Population	RF1	2,649	
	RF4	308	
	RF5	176	
	RF5	352	
	RF6	278	
		3,763	
Area	RF5	2.82	ha
	RF5	1.41	
	RF6	1.41	
		5.64	

Single family development at 16 units/ha x 5.64 ha = 90 units

90 units at 3.46 persons/du = 311 persons

If RF5 and RF6 land is developed as RF1, total population = 3,268 (loss of 495)

Scenario #2

Lewis Farms

Assuming RF1, RF4, RF5 land is developed as proposed and multi family land is half developed as RF1, half developed as per district.

Total population loss for neighbourhoods 1 - 8	84
	0
	1,351
	60
	192
	193
	837
	102
	2,819

Total population proposed 27,439

Loss of 10% of proposed population if half multi-family land developed to RF1.

Total population for plan would be 24,620

Total plan area 600.3 ha

Population density for plan would be 41 p/gdh
(original figure = 45.7)

Neighbourhood #1

Population	RF1	2,402	
	RF5	151	
		302	
		2,855	
	RF6	238	x ½ = 119 persons
Area	RF6	1.21 ha	x ½ = 0.6 ha

Single family development at 16 units/ha x 0.6 ha = 9.6 units

10 units at 3.46persons/du = 35 persons

Total population would be	2,855
	119
	35
	3,009

Population loss would be 84 (3% of proposed)

Neighbourhood #2

Population	RF1	1,546
	RF4	83
	RF5	189
		1,818

No change to proposed population.

Neighbourhood #3

Population	RF1	1,098		
	RF5	134		
		84		
		1,316		
	RF6	392	x ½ =	196
	RA7	706	x ½ =	353
	RA8	1,017	x ½ =	508
	RA9	1,085	x ½ =	542
		4,516		1,599
Area	RF6	1.98	ha	
	RA7	2.90		
	RA8	2.32		
	RA9	1.74		
		8.94	ha x ½ =	4.47 ha

Single family development at 16 units/ha x 4.47 ha = 72units

72 units at 3.46 persons/du = 249 persons

Total population would be	1,316
	1,599
	249
	3,164

Population loss would be 1,352 (30% of proposed)

Neighbourhood #4

Population	RF1	1,569		
	RF4	63		
	RF5	180		
		1,812		
	RF6	171	x ½ =	85.5
		1,984		
Area	RF6	0.86	ha x ½ =	0.43 ha

Single family development at 17.5 units/ha x 0.43 ha = 7.5 units

7.5 units at 3.46 persons/du = 26 persons)

Total population would be	1,812
	86
	26
	1,924

Population loss would be 60 (3% of proposed)

Neighbourhood #5

Population	RF1	2,553		
	RF4	163		
	RF5	124		
	RF5	310		
		3,150		
	RF6	294	x ½ =	147
	RA7	242	x ½ =	121
		3,686	x ½ =	268
Area	RF6	1.49		
	RA7	0.99		
		2.48 ha	x ½ =	1.24 ha

Single family development at 17.5 units/ha x 1.24 ha = 21.7 units

22 units at 3.46 persons/du = 76 persons

Total population would be	3,150
	268
	76
	3,494

Population loss would be 192 (5% of proposed)

Neighbourhood #6

Population	RF1	2,568		
	RF4	164		
	RF5	125		
	RF5	312		
		3,169		
	RF6	296	x ½ =	148
	RA7	243	x ½ =	121.5
		3,708		269.5
Area	RF6	1.50		
	RA7	1.00	x ½ =	1.25 ha
		2.50		

Single family development at 17.5 units/ha x 1.25 ha = 21.9 units

22 units at 3.46 persons/du = 76 persons

Total population would be	3,169
	270
	76
	3,515

Population loss would be 193 (5% of proposed)

Neighbourhood #7

Population	RF1	2,316		
	RF4	57		
	RF5	164		
	RF5	327		
		2,864		
	RF6	258	x ½ =	129
	RA7	637	x ½ =	318.5
	RA8	459	x ½ =	229.5
	RA9	653	x ½ =	326.5
		4,871		1,003.5
Area	RF6	1.31		
	RA7	2.62		
	RA8	1.05		
	RA9	1.05		
		6.03	x ½ =	3.01 ha

Single family development at 16 units/ha x 3.01 ha = 48.16 units

48 units at 3.46 persons/du = 166.7 persons

Total population would be	2,864
	1,004
	167
	4,035

Population loss would be 836 (17% of proposed)

Neighbourhood #8

Population	RF1	2,649		
	RF4	308		
	RF5	176		
	RF5	352		
		3,485		
	RF6	278	x ½ =	139
		3,763		
Area	RF6	1.41	x ½ =	0.7 ha

Single family development at 16 units/ha x 0.7 ha = 11.2 units

11units at 3.46 persons/du = 38 persons

Total population would be	3,485
	139
	38
	3,662

Population loss would be 101 (3% of proposed)

Scenario #3

Lewis Farms

Assuming multi-family sites are built at half permitted density, the total population for Lewis Farms:

Neighbourhood #1	2,974	
Neighbourhood #2	1,818	
Neighbourhood #3	2,911	
Neighbourhood #4	1,896	
Neighbourhood #5	3,417	
Neighbourhood #6	3,438	
Neighbourhood #7	3,866	
Neighbourhood #8	3,623	
	23,943	Loss of 3,496 (13%)

The total plan area = 600.3 ha

Population density under assumption #3 = 40 p/gdh

(Area Structure Plan density = 45.7)

Assuming multi-family sites built at half permitted density

Neighbourhood #1

District	Hectares	Units/Ha	Units	Persons/Du	Population
RF6	1.21	40	48	2.47	119

Total population = 2,974 (loss of 4% of proposed)

Neighbourhood #2

District	Hectares	Units/Ha	Units	Persons/Du	Population

No multi-family sites

Total population = 1,818 (no change)

Neighbourhood #3

District	Hectares	Units/Ha	Units	Persons/Du	Population
RF6	1.98	40	79	2.47	195
RA7	2.90	62	180	1.95	351
RA8	2.32	112	260	1.95	507
RA9	1.74	160	278	1.95	542

Total population = 2,911 (loss of 1,604 (36% of proposed))

Neighbourhood #4

District	Hectares	Units/Ha	Units	Persons/Du	Population
RF6	0.86	40	34	2.47	84

Total population = 1,896 (loss of 88 (4% of proposed))

Neighbourhood #5

District	Hectares	Units/Ha	Units	Persons/Du	Population
RF6	1.49	40	60	2.47	148
RA7	0.99	62	61	1.95	119

Total population = 3,417 (loss of 269 (7% of proposed))

Neighbourhood #6

District	Hectares	Units/Ha	Units	Persons/Du	Population
RF6	1.50	40	60	2.47	148
RA7	1.00	62	62	1.95	121

Total population = 3,438 (loss of 270 (7% of proposed))

Neighbourhood #7

District	Hectares	Units/Ha	Units	Persons/Du	Population
RF6	1.31	40	52	2.47	128
RA7	2.62	62	162	1.95	316
RA8	1.05	112	118	1.95	230
RA9	1.05	160	168	1.95	328

Total population = 3,866 (loss of 1,006 (21% of proposed))

Neighbourhood #8

District	Hectares	Units/Ha	Units	Persons/Du	Population
RF6	1.41	40	56	2.47	138

Total population = 3,623 (loss of 141 (4% of proposed))

Scenario #1

The Meadows

If all multi-family land is developed as RF1, total population loss from figures proposed in Area Structure Plan would be as follows:

Total population loss for neighbourhood 1 - 8	1,650
	358
	1,122
	505
	648
	1,309
	977
	6,569

Total population proposed in Area Structure Plan 46,492

Loss of 14% of proposed population if all multi-family land developed as RF1.

Total population for plan would be 39,923

Total plan area 1,078.24 ha

Population density for plan would be 37.0 p/gdh
(density figure in Area Structure plan = 43.12 p/gdh)

Source:

The Meadows Area Structure Plan Amendment I.M.C., May 1987.

Neighbourhood #1

Population	RF1	2,964	
	RF4	233	
	RF5	280	
	RF6	590	
	RA7	829	
	RA8	690	
		5,586	
Area	RF5	2.0	ha
	RF6	4.0	
	RA7	4.0	
	RA8	2.0	
		12.0	ha

Single family development at 15.8 units/ha x 12 ha = 190 units

190 units at 3.89 person/du = 739 persons

If RF5 RF6, RA7, and RA8 land is developed as RF1, total population = 3,936 (loss of 1,650) (30%)

Neighbourhood #2

Population	RF1	5,998	
	RF5	549	
		6,547	
Area	RF5	3.32	ha

Single family development at 14.8 units/ha x 3.32 ha = 49 units

49 units at 3.89 persons/du = 191 persons

If RF5 land is developed as RF1, total population = 6,189 (loss of 358) (5%)

Neighbourhood #3

Population	RF1	6,913	
	RF4	233	
	RF5	280	
	RF6	590	
	RA7	829	
		8,845	
Area	RF5	2.0	ha
	RF6	4.0	
	RA7	4.0	
		10.0	

Single family development at 14.8 units/ha x 10 ha = 148units

148 units at 3.89 persons/du = 577 persons

If RF5, RF6, and RA7 land is developed as RF1, total population = 7,723 (loss of 1,122) (13%)

Neighbourhood #4

Population	RF1	4,728	
	RF4	450	
	RF5	563	
	RA7	230	
		5,971	
Area	RF5	4.0	ha
	RA7	1.1	
		5.1	

Single family development at 14.5 units/ha x 5.1 ha = 74 units

74 units at 3.89 persons/du = 288 persons

If RF5 and RA7 land is developed as RF1, total population = 5,466 (loss of 505) (8%)

Neighbourhood #5

Population	RF1	4,080	
	RF4	459	
	RF5	562	
	RA7	436	
		5,537	
Area	RF5	4.0	ha
	RA7	2.1	
		6.1	

Single family development at 14.8 units/ha x 6.1 ha = 90 units

90 units at 3.89 persons/du = 350 persons

If RF5 and RA7 land is developed as RF1, total population = 4,889 (loss of 648) (12%)

Neighbourhood #6

Population	RF1	4,672	
	RF4	459	
	RF5	1,125	
	RA7	892	
		7,148	
Area	RF5	8.0	ha
	RA7	4.3	
		12.3	

Single family development at 14.8 units/ha x 12.3 ha = 182 units

182 units at 3.89 persons/du = 708 persons

If RF5 and RA7 land is developed as RF1, total population = 5,839 (loss of 1,309) (18%)

Neighbourhood #7

Population	**RF1**	4,481	
	RF4	922	
	RF5	563	
	RA7	892	
		6,858	
Area	**RF5**	4.0	ha
	RA7	4.3	
		8.3	

Single family development at 14.8 units/ha x 8.3 ha = 123 units

123 units at 3.89 persons/du = 478 persons

If RF5 and RA7 land is developed as RF1, total population = 5,881 (loss of 977) (14%)

Scenario #2

The Meadows

Assuming RF1, RF4, and RF5 land are developed as per district, multi family land is developed half RF1, half as per district.

Total population loss for neighbourhood 1 - 7	748
	0
	480
	84
	158
	319
	325
	2,114

Total population proposed in Area Structure Plan 46,492

Loss of 4.5% of proposed population if multi-family land half developed to RF1.

Total population for plan would be 44,378

Total plan area 1,078.24ha

Population density for plan would be 41.2 p/gdh
(density figure in Area Structure Plan = 43.12)

Neighbourhood #1

Assuming RF1, RF4 and RF5 developed as proposed, multi family land half developed RF1, half developed as per district

Population	RF1		2,964	
	RF4		233	
	RF5		280	
			3,477	
	RF6	(x ½)	295	
	RA7	(x ½)	414	
	RA8	(x ½)	345	
			4,531	
Area	RF6		4.0	ha
	RA7		4.0	
	RA8		2.0	
			10.0	ha x ½ = 5 ha

Single family development at 15.8 units/ha x 5 ha = 79 units

79 units at 3.89 persons/du = 307 persons

Total population would be	4,531
	307
	4,838

Population loss would be 748 (13%)

Neighbourhood #2

No change, population = 6,547

Neighbourhood #3

Population	RF1		6,913	
	RF4		233	
	RF5		280	
			7,426	
	RF6	(x ½)	295	
	RA7	(x ½)	414	
			8,135	
Area	RF6		4.0	
	RA7		4.0	
			8.0	ha x ½ = 4 ha

Single family development at 14.8 units/ha x 4 ha = 59 units

59 units at 3.89 persons/du = 230 persons

Total population would be	8,135
	230
	8,365

Population loss would be 480 (5%)

Neighbourhood #4

Population	RF1		4,728	
	RF4		450	
	RF5		563	
	RA7	(x ½)	115	
			5,856	
Area	RA7		1.1	x ½ = 0.55 ha

Single family development at 14.5 units/ha x 0.55 ha = 8 units

8 units at 3.89 persons/du = 31 persons

Total population would be	5,856
	31
	5,887

Population loss would be 84 (1.4%)

Neighbourhood #5

Population	RF1		4,080
	RF4		459
	RF5		562
	RA7	(x ½)	218
			5,319
Area	RA7	(x ½)	1.05 ha

Single family development at 14.8 units/ha x 1.05 ha = 15.54 units

15.54 units at 3.89 persons/du = 60 persons

Total population would be	5,319
	60
	5,379

Population loss would be 158 (3%)

Neighbourhood #6

Population	RF1		4,672
	RF4		459
	RF5		1,125
	RA7	(x ½)	446
			6,702
Area	RA7	(x ½)	2.15 ha

Single family development at 14.8 units/ha x 2.15 ha = 32 units

32 units at 3.89 persons/du = 124 persons

Total population would be	6,702
	124
	6,826

Population loss would be 322 (4%)

Neighbourhood #7

Population	RF1		4,481
	RF4		922
	RF5		563
	RA7	(x ½)	446
			6,412
Area	RA7	(x ½)	2.15 ha

Single family development at 14.8 units/ha x 2.15 ha = 32 units

32units at 3.89 persons/du = 121 persons

Total population would be	6,412
	121
	6,533

Population loss would be 325 (4.7%)

Scenario #3

The Meadows

Assuming all multi family sites (RF6) are built at half proposed density:

	Multi-Family Population	Total Population
Neighbourhood #1	1,054	4,531
Neighbourhood #2	0	6,547
Neighbourhood #3	709	8,135
Neighbourhood #4	115	5,856
Neighbourhood #5	218	5,319
Neighbourhood #6	446	6,702
Neighbourhood #7	446	6,412
		43,502

Residential gross developable area = 1,078.24 ha

Population proposed in Area Structure Plan = 46,492

Population loss under assumption 3 = 3,990 (6%)

Population density under assumption 3 = 40.3 ppgha

Population density in Area Structure Plan = 43.12 ppgha

APPENDIX C

Public School Generation Figures

Districting	Elementary	Junior High	Senior High
RF1	.43/unit	.20/unit	.16/unit
RF2	.43/unit	.12/unit	.08/unit
RF3	.43/unit	.12/unit	.08/unit
RF4	.43/unit	.12/unit	.08/unit
RPL	.35/unit	.12/unit	.12/unit
RF5	.43/unit	.12/unit	.12/unit
RF6	.25/unit	.08/unit	.08/unit
RA7	.11/unit	.04/unit	.04/unit
RA8	0	0	0
RA9	0	0	0

ASP, NSP areas when no districting or unit count is given:

Pupils/1,000 population	Type
86	elementary
27.86	junior high
27.02	senior high